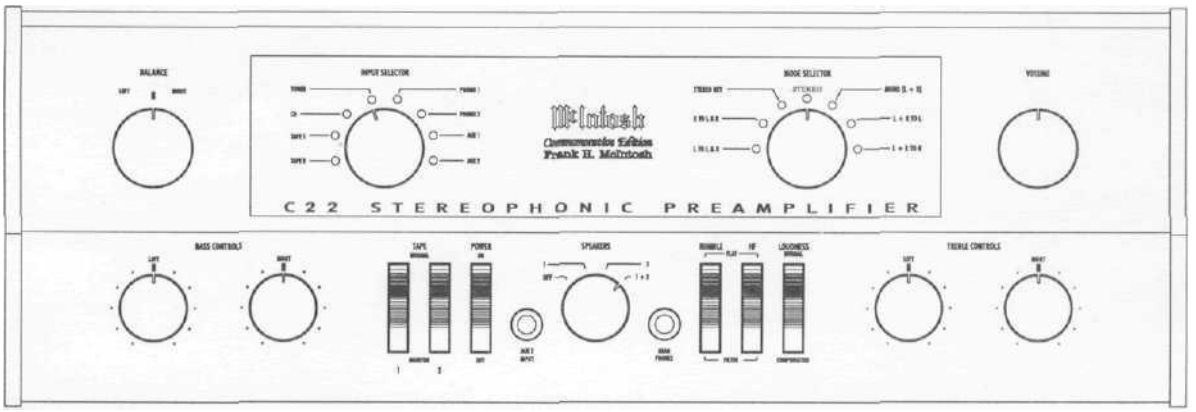
C22
PREAMPLIFIER



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McIntosh
Service Manual

McIntosh Laboratory, Inc. 2 Chambers Street, Binghamton, New York 13903 Printed

Performance Specifications

FREQUENCY RESPONSE
+0, -0.5dB from 20Hz to 20,000Hz

RATED OUTPUT
2.5V at MAIN and SWITCHED 1 and 2, and BALANCED OUTPUTS

MAXIMUM VOLTAGE OUTPUT
More than 8V at all outputs

TOTAL HARMONIC DISTORTION
0.002% maximum IHF, 0.2% maximum from 20Hz to 20,000Hz at rated output

SENSITIVITY
Phono: 2.2mV for 2.5V rated output, (0.45mV IHF)
High Level: 250mV for 2.5V rated output, (50mV IHF)

SIGNAL-TO-NOISE RATIO, A-WEIGHTED
Phono: 80dB below 10mV input
High Level: 90dB below rated output

VOLTAGE GAIN
Phono To Tape: 41 dB at 1000Hz
Phono To Main: 61 dB at 1000Hz
High Level To Tape: 0dB
High Level To Main: 20dB

INPUT IMPEDANCE
Phono: 47K ohms and 65pF Capacitance
High Level: 22K ohms

TONE CONTROLS
Bass and Treble stepped, 20dB boost to 20dB cut

AC POWER OUTLETS
4 switched and 1 unswitched, Total capacity 1400 watts

POWER REQUIREMENTS
120V, 50/60Hz, 37 watts

DIMENSIONS
Front Panel: 16 inches (40.6cm) wide by 5-7/16 inches (13.8cm) high. Chassis depth behind mounting panel, including clearance for connectors: 14 inches (35.6cm). Knob clearance required in front of mounting panel: 1-1/2 inches (3.8cm).

FINISH
Anodized gold and black front panel, chassis is black.

WEIGHT
16 pounds (7.3Kg) net, 25 pounds (11.4Kg) in shipping carton

Notes

1. The four types of heavy lines on the schematics denote the primary signal path in the following manner:
   - ▬▬▬▬ = LEFT CHANNEL
   - ▬ ▬ ▬ ▬ = RIGHT CHANNEL
   - ▪ ▪ ▪ ▪ ▪ ▪ = LEFT BALANCED
   - ▬ ▬ ▬ ▬ = RIGHT BALANCED

2. Unless otherwise noted, all voltages indicated on the schematics are measured under the following conditions:
   a. AC input at 120 volts, 50/60Hz.
   b. All voltages are ±10% with respect to ground. A high impedance (10 megohm) voltmeter must be used.

3. Unless otherwise specified:
   a. Resistor values are in ohms.
   b. Capacitor values are in microfarads (uF).

4. The voltages enclosed in a box are signal voltages that are measured with a 2.2mV, 1kHz signal connected to both channels at the PHONO 1 INPUT JACKS.

FRONT PANEL CONTROLS are set at:

BALANCE	CENTER DETENT
BASS and TREBLE	CENTER DETENT
INPUT SELECTOR	PHONO 1
LOUDNESS	NORMAL
MODE	STEREO
POWER	ON
VOLUME	CLOCKWISE
TAPE MONITOR 1 and 2	NORMAL
RUMBLE and HF FILTERS	FLAT
SPEAKERS	1&2

5. On PC Board Drawings, Square Pad Indicates:
   a. Polarized Capacitors - Positive
   b. Diode - Cathode
   c. Others - Pin 1

6. WARNING:
   Parts marked with the symbol ⚠ have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

Rear Panel

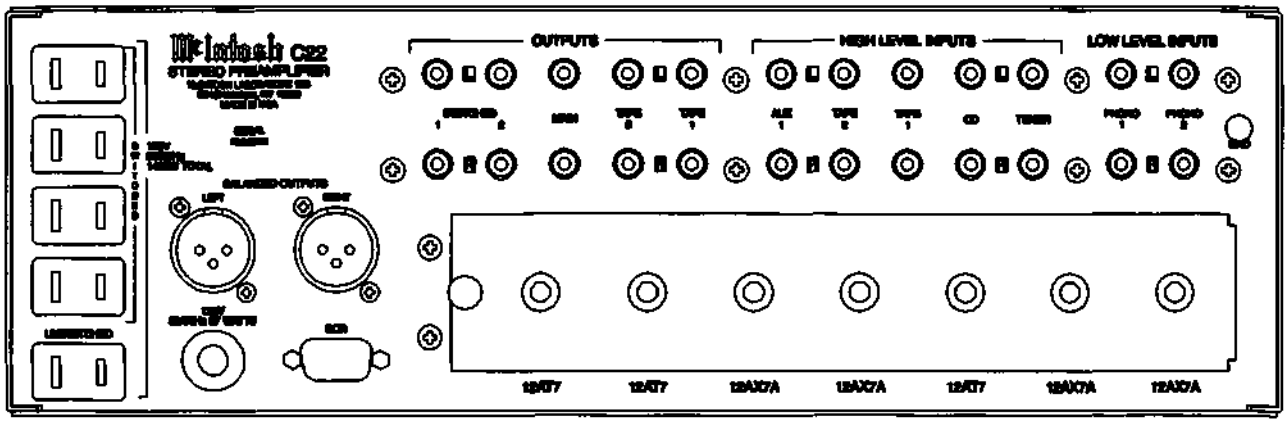


Fig. 1 Rear view

FRONT PANEL and TRIM PARTS LIST

Symbol	*Description*
016340	Indicator Glass
016334	Front Panel Glass
018511	Top Panel Extrusion
018512	Lower Panel Extrusion
018520	End Cap Left
018521	End Cap Right
C22-FrontPanel	Front Panel Complete W/Glass
090242	Input/Mode Knob
090243	Balance/Volume Knob
090244	Bass/Speaker/Treble Knob
101035	Screw, 4-40 x 5/16 Fill Head
104143	Felt Washer 3/4" Dia
104144	Felt Washer 5/8" Dia

Section Locations

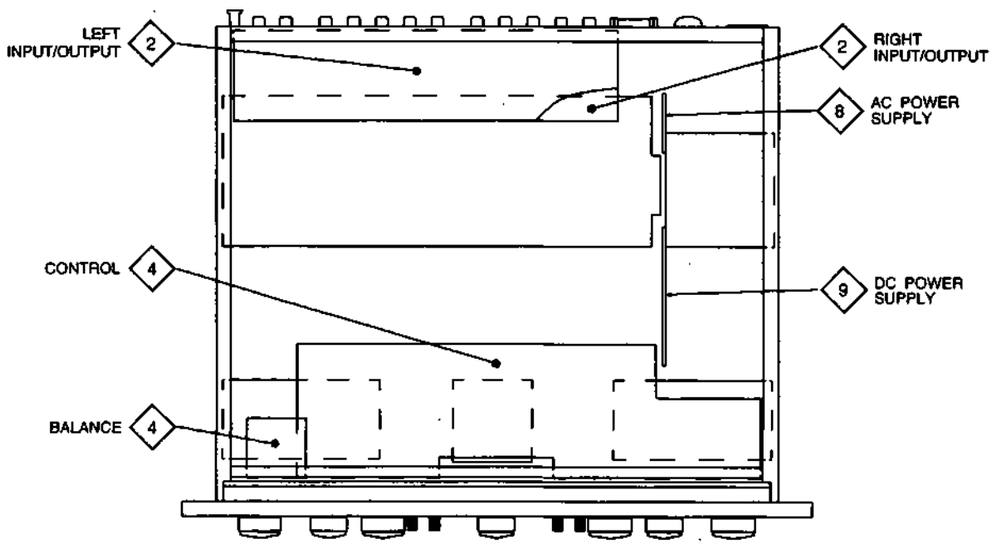


Fig. 2 Top view with cover removed

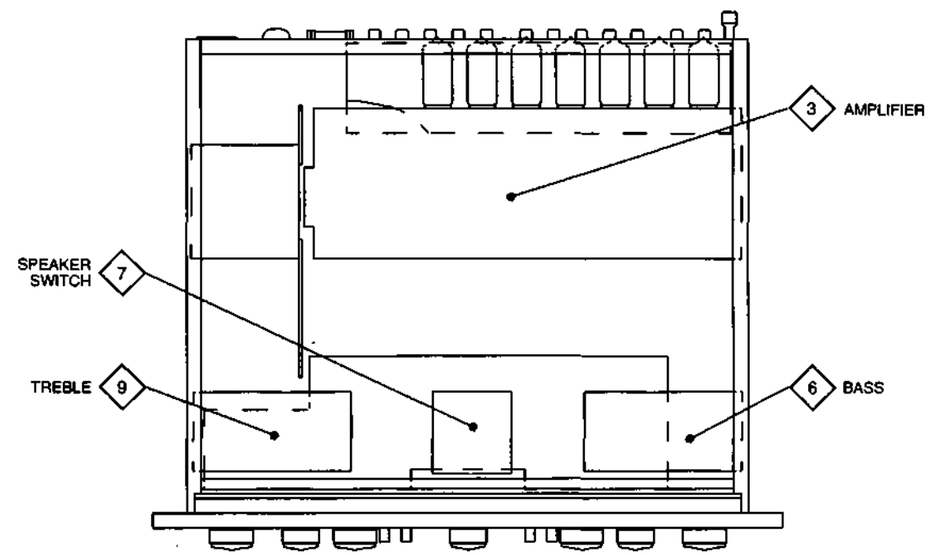
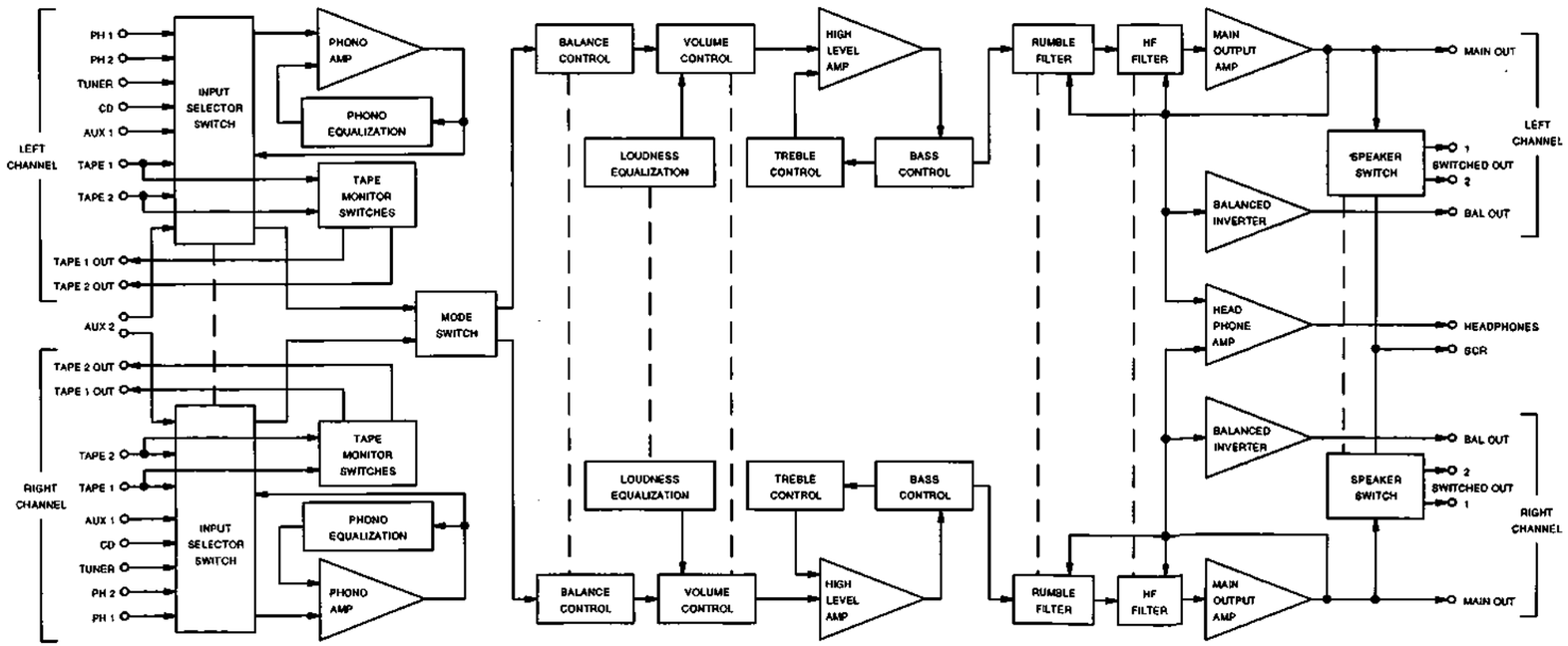


Fig. 3. Bottom view with cover removed

Block Diagram



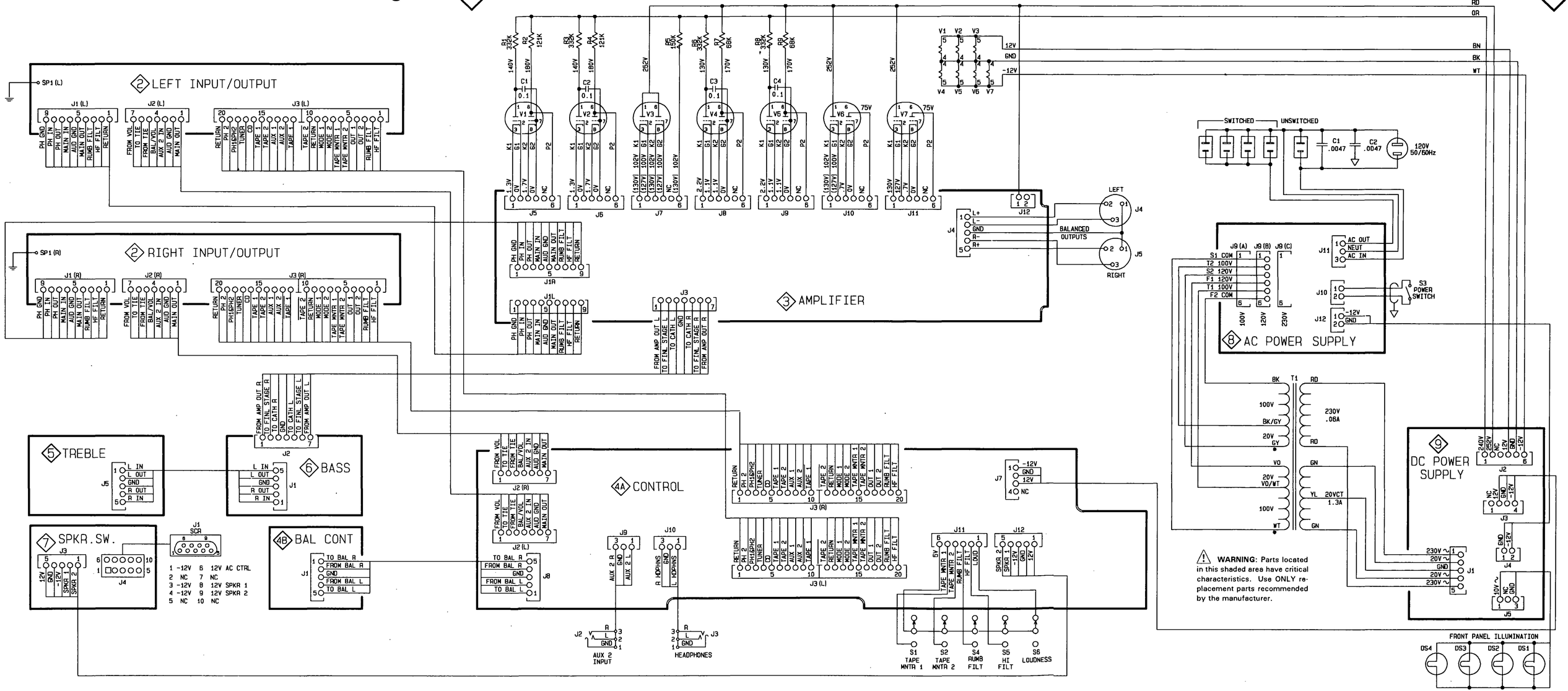
5

INTERCONNECTION PARTS LIST

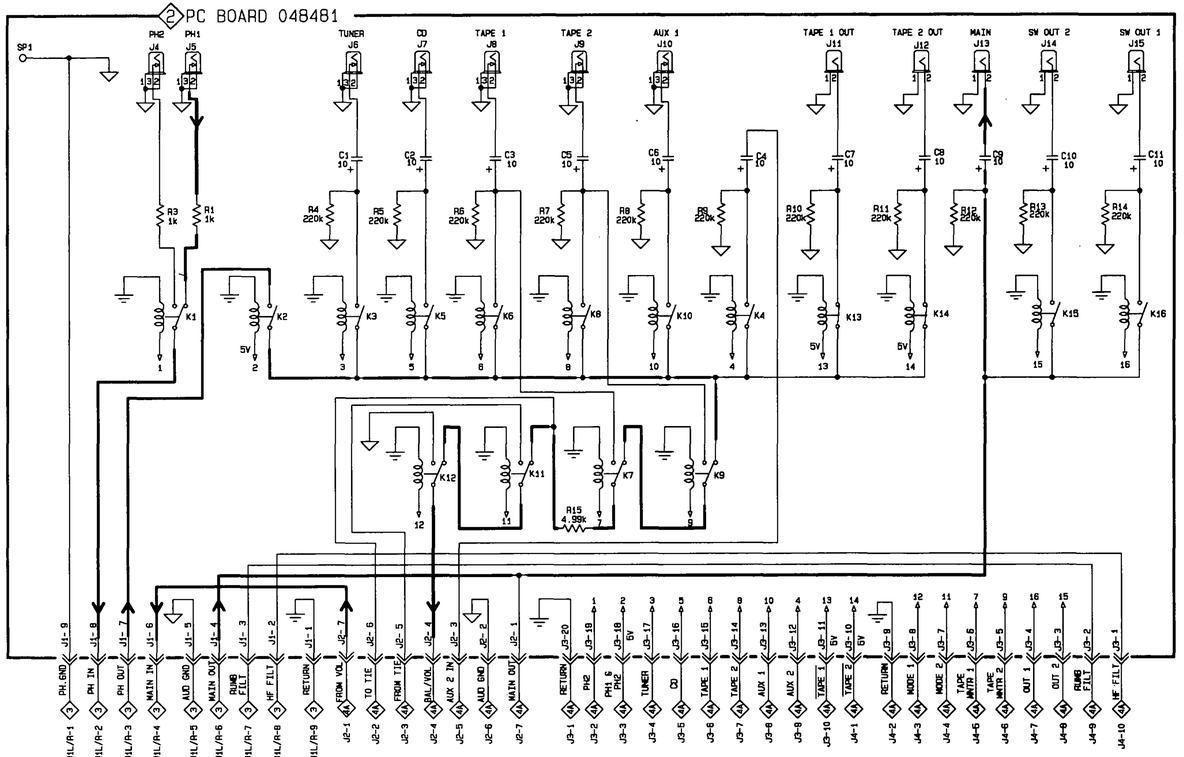
Symbol	*Part*	*Description*
CAPACITORS		
C1.C2	061276	DISC CAP, .0047uF, 400VAC
JACKS		
J2,J3	117563	Phone Jack
J4,J5	117437	XLR Connector, Male
LIGHTING DEVICES		
DS1.DS2	058138	Lamp Fuse Style
DS3.DS4	058137	Lamp Disc Indicator
SWITCHES		
S1-S6	148068	Slide Switch (SPDT)
TRANSFORMERS		
T1	159248	Power Transformer

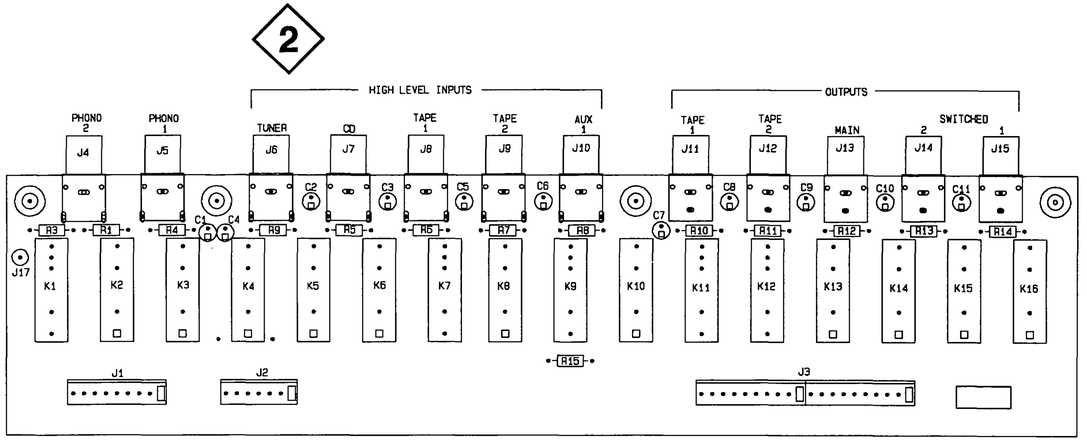
6

Interconnection Diagram 1



2 Input/Output, Left and Right





LEFT INPUTS/OUTPUTS PCB 048481
AND
RIGHT INPUTS/OUTPUTS PCB 048476

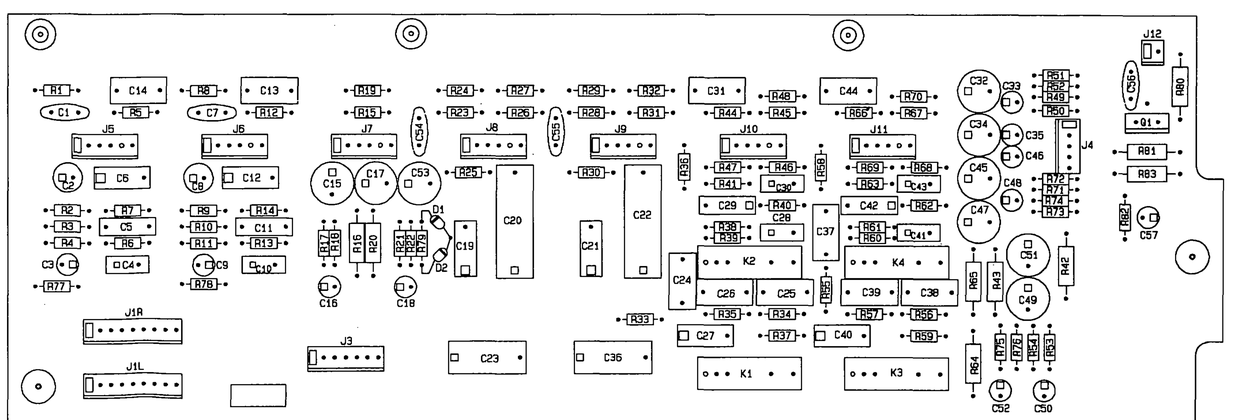
INPUT/OUTPUT PARTS LIST

Symbol	*Part*	*Description*
RELAYS		
K1,K7,K9, K11,K12	087056	Form 1C, 5VDC, Reed, HE3321C0500
K2-K6.K8, K10,K13-K16	087050	SPST. 5VDC, Reed, HE3321A0400

AMPLIFIER PARTS LIST

Symbol	*Part*	*Description*
RELAYS		
K1-K4	087056	Form 1C, 5VDC, Reed, HE3321C0500
DIODES		
D1.D2	070102	Zener: 51V, 5%, 400mW
TRANSISTORS		
Q1	132248	NPN, 300V, 2SC3790D or E

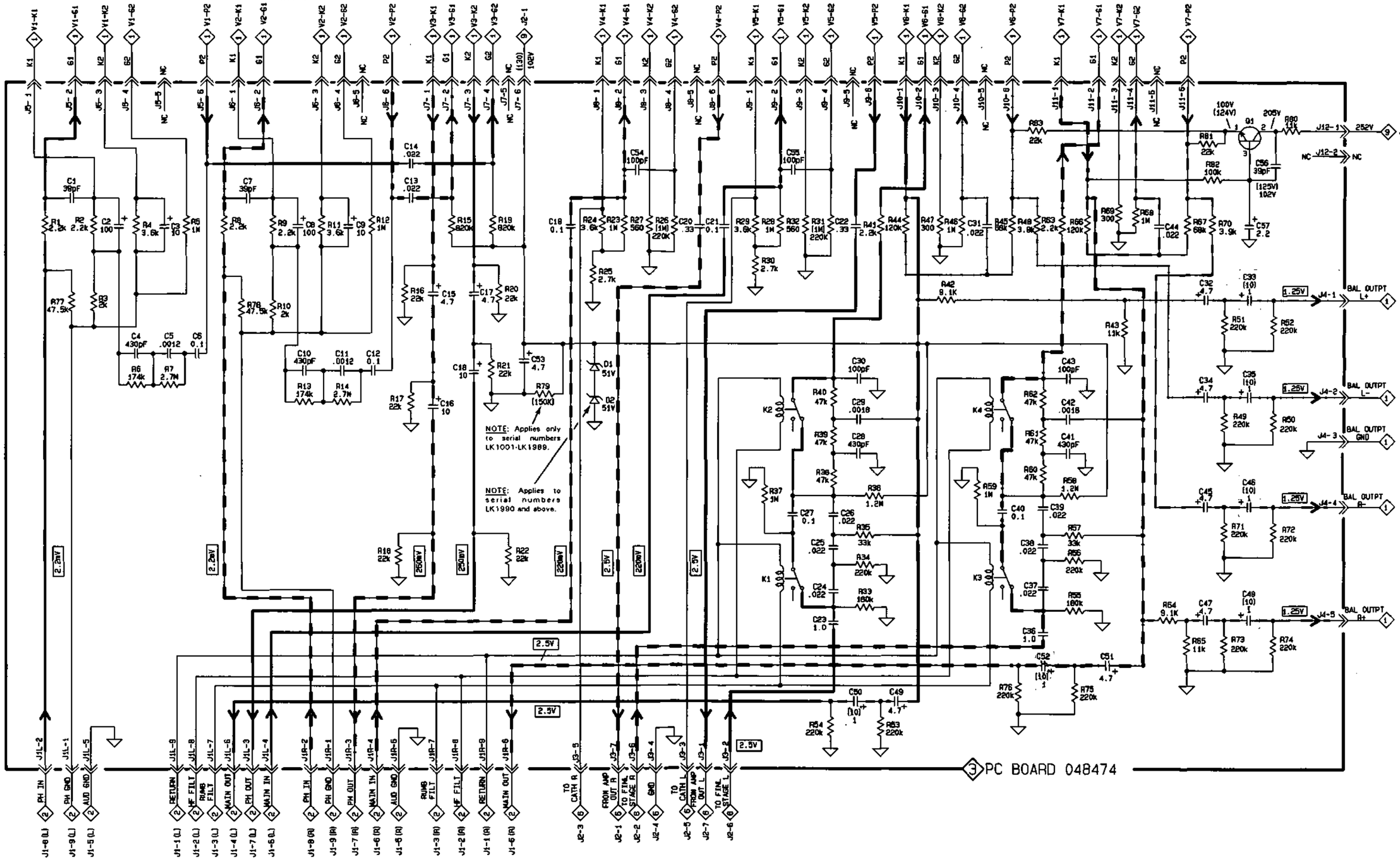
3



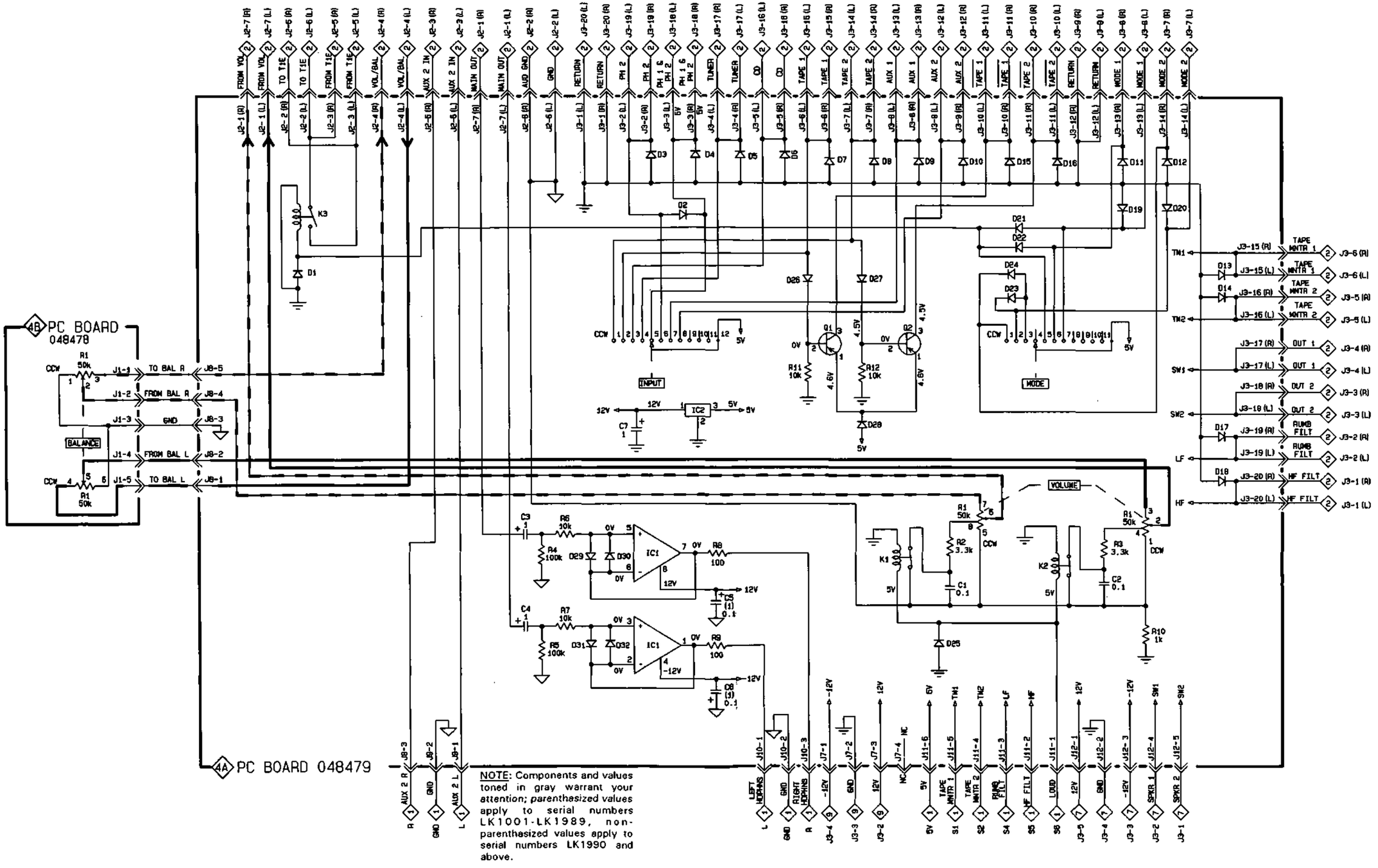
AMPLIFIER PCB 048474

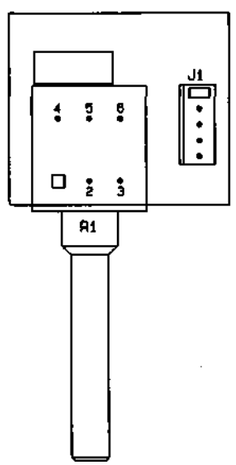
Amplifier

NOTE: Components and values toned in gray warrant your attention; parenthesized values apply to serial numbers LK1001-LK1989. non-parenthasized values apply to serial numbers LK1990 and above.

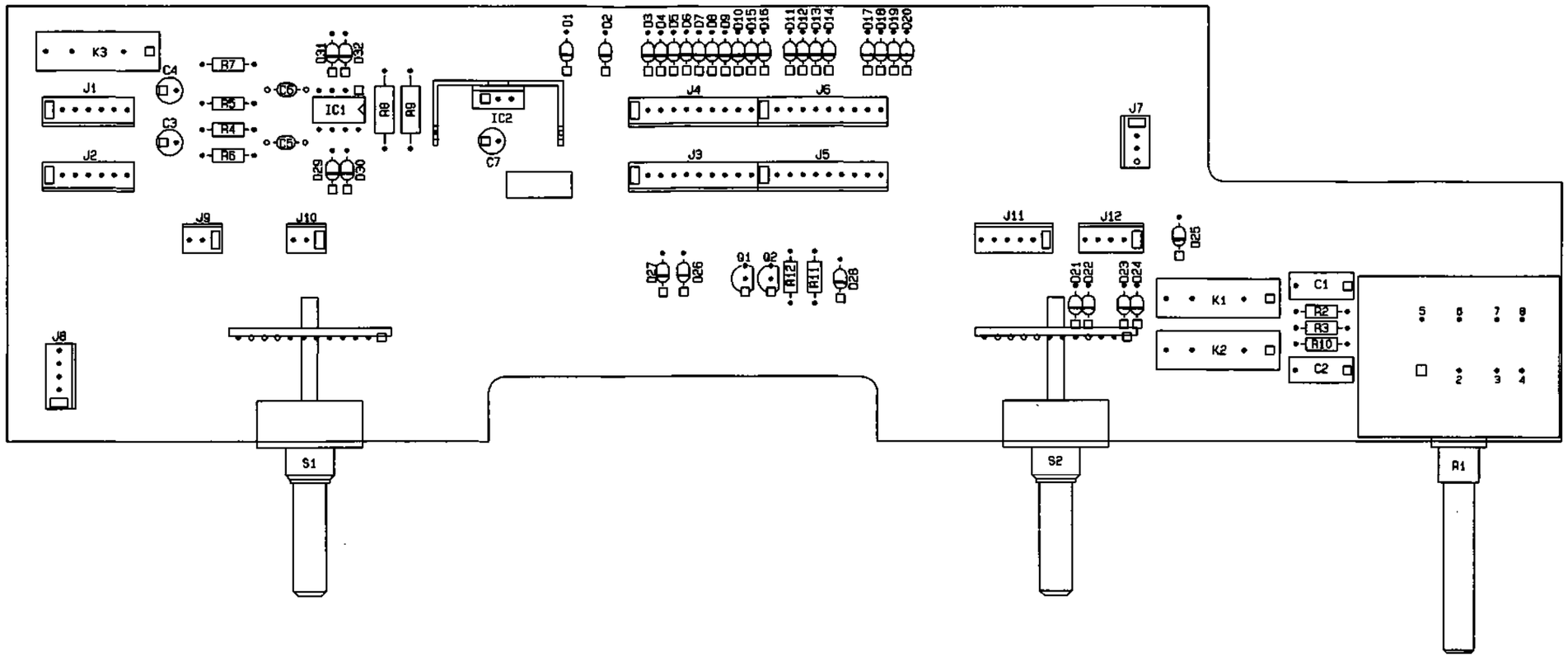


4 Control and Balance Control


4B PC BOARD 048478
4A PC BOARD 048479
BALANCE
VOLUME
INPUT
MODE
TO BAL R
FROM BAL R
GND
TO BAL L
FROM BAL L
NOTE: Components and values toned in gray warrant your attention; parenthasized values apply to serial numbers LK1001-LK1989, non-parenthasized values apply to serial numbers LK1990 and above.



BALANCE CONTROL
PCB 048478



CONTROL PCB 048479

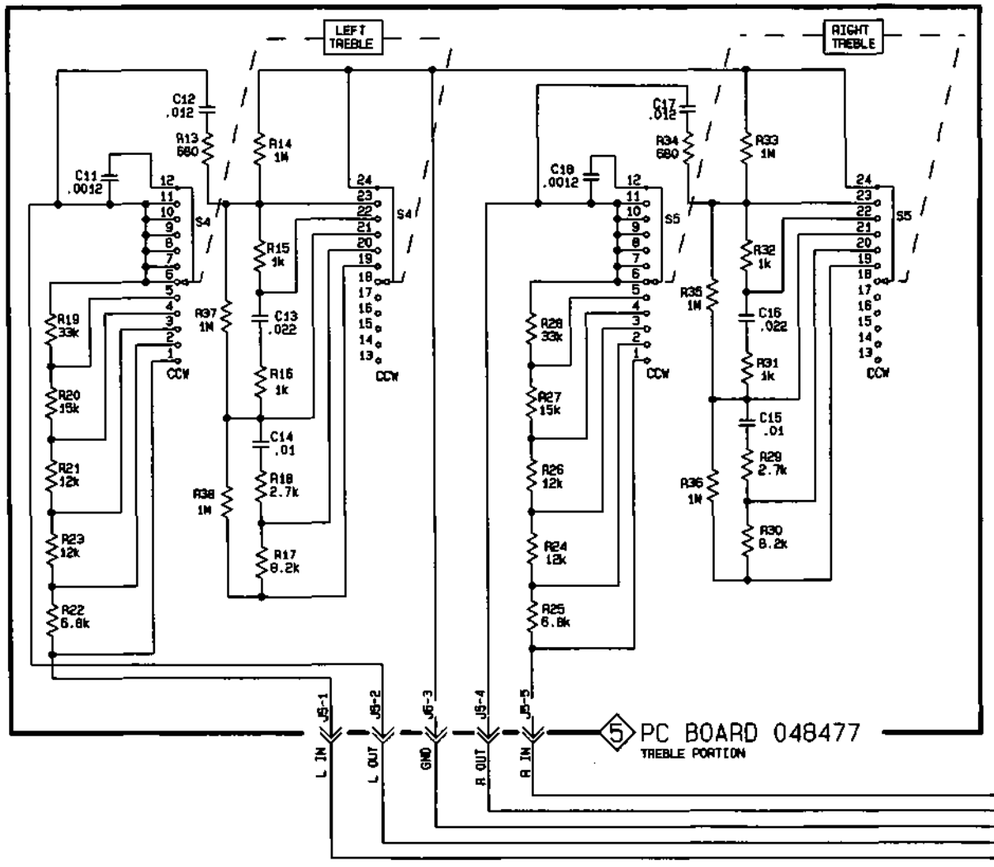
BALANCE CONTROL PARTS LIST

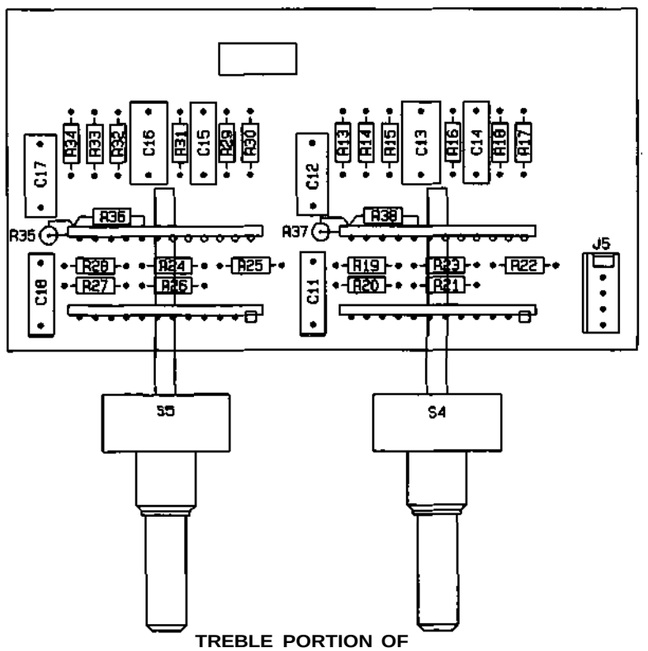
Symbol	*Part*	*Description*
RESISTORS and POTENTIOMETERS		
R1	134475	Balance Control

CONTROL PARTS LIST

Symbol	*Part*	*Description*
DIODES		
D1-D32	070047	SIG, 75V, 150mA, 1N4148
INTEGRATED CIRCUITS		
IC1	133189	Dual Op-Amp. MC33178P
IC2	133108	5V Regulator MC7805CT
RELAYS		
K1-K3	087050	SPST, 5VDC, Reed, HE3321A0400
RESISTORS		
R1	134476	Volume Control
SWITCHES		
S1	146238	Input Switch
S2	146239	Mode Switch
TRANSISTORS		
Q1,Q2	132224	PNP, MPS4126

5 Treble



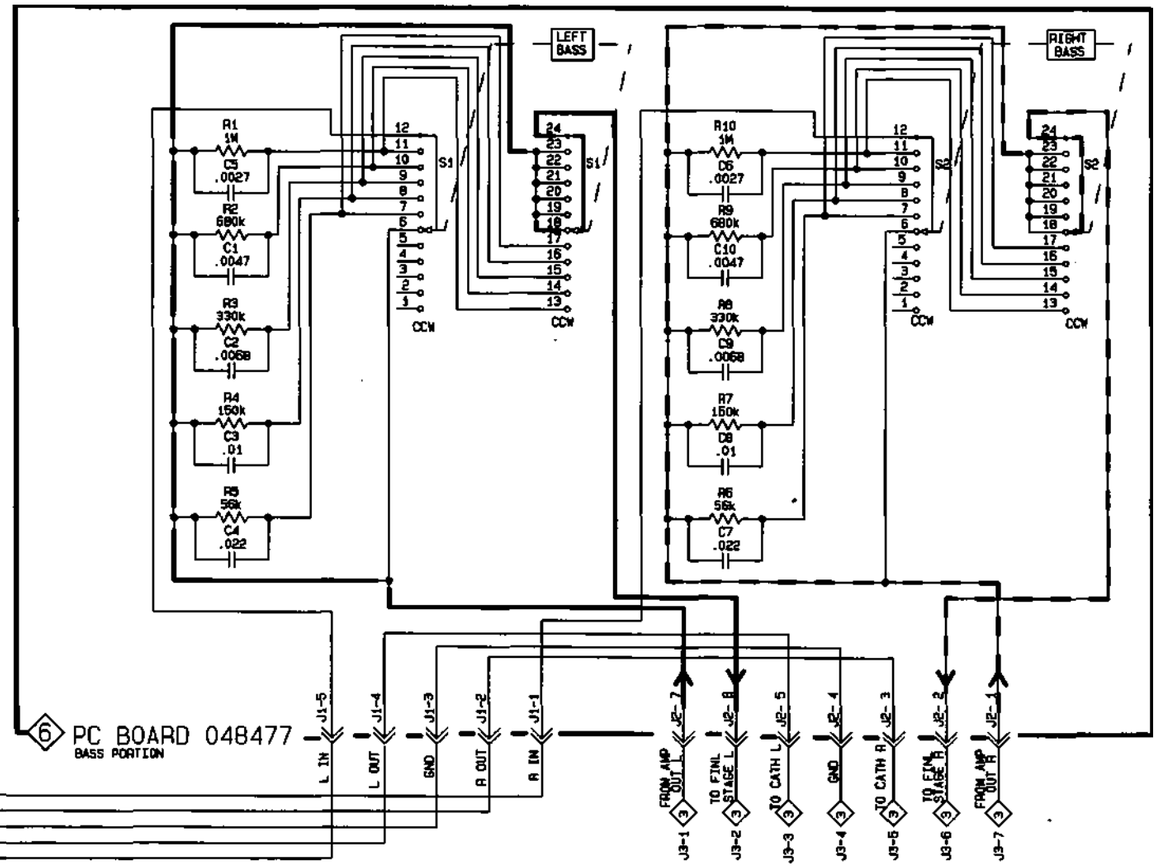


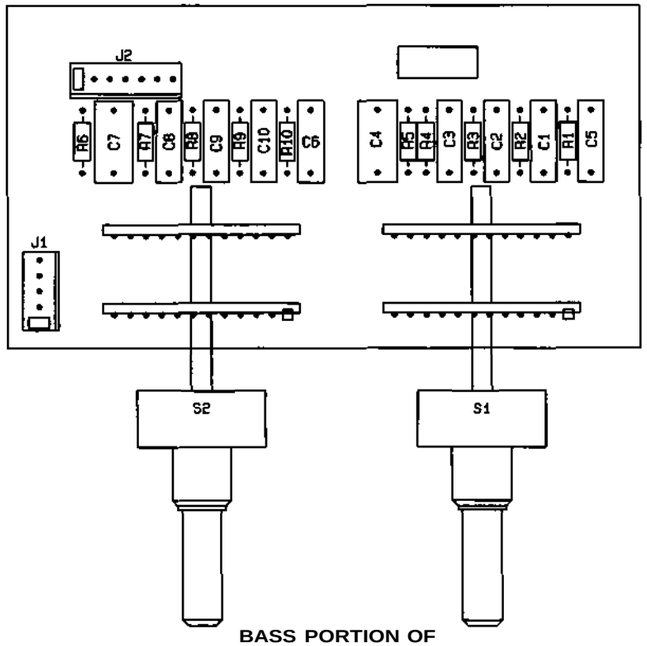
TREBLE PORTION OF PCB 048477

TREBLE PARTS LIST

Symbol	*Part*	*Description*
SWITCHES		
S4.S5	146240	Bass/Treble Switch

6 Bass

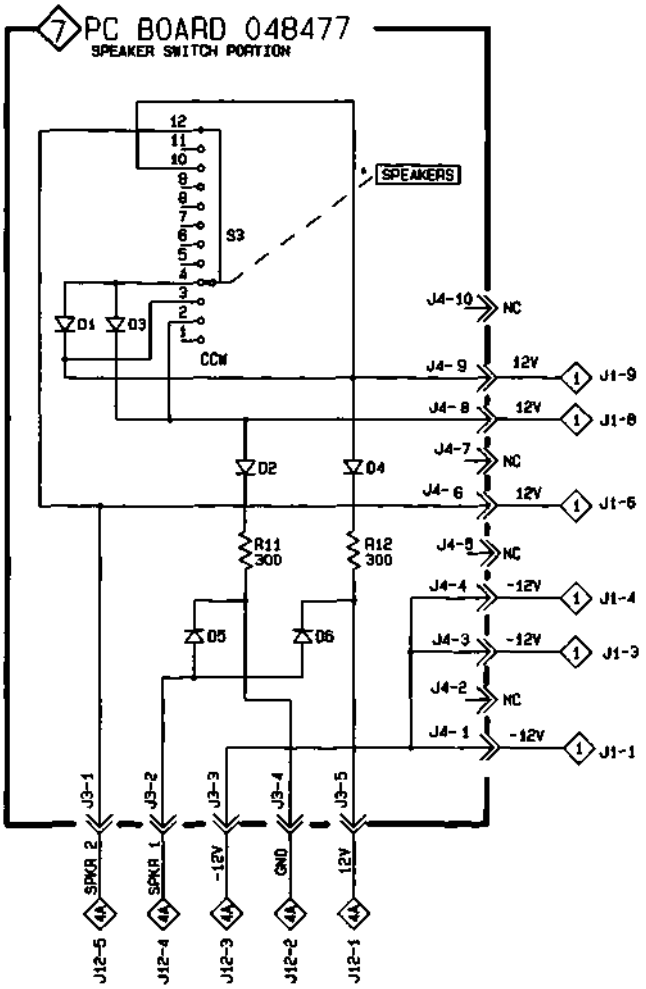


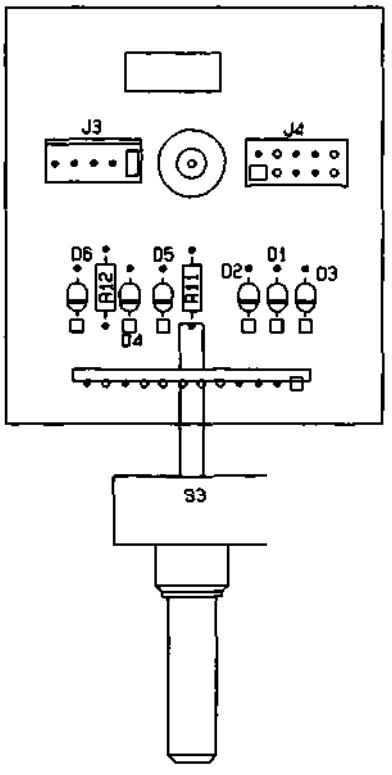


BASS PORTION OF PCB 048477

BASS PARTS LIST

Symbol	*Part*	*Description*
SWITCHES		
S1.S2	146240	Bass/Treble Switch



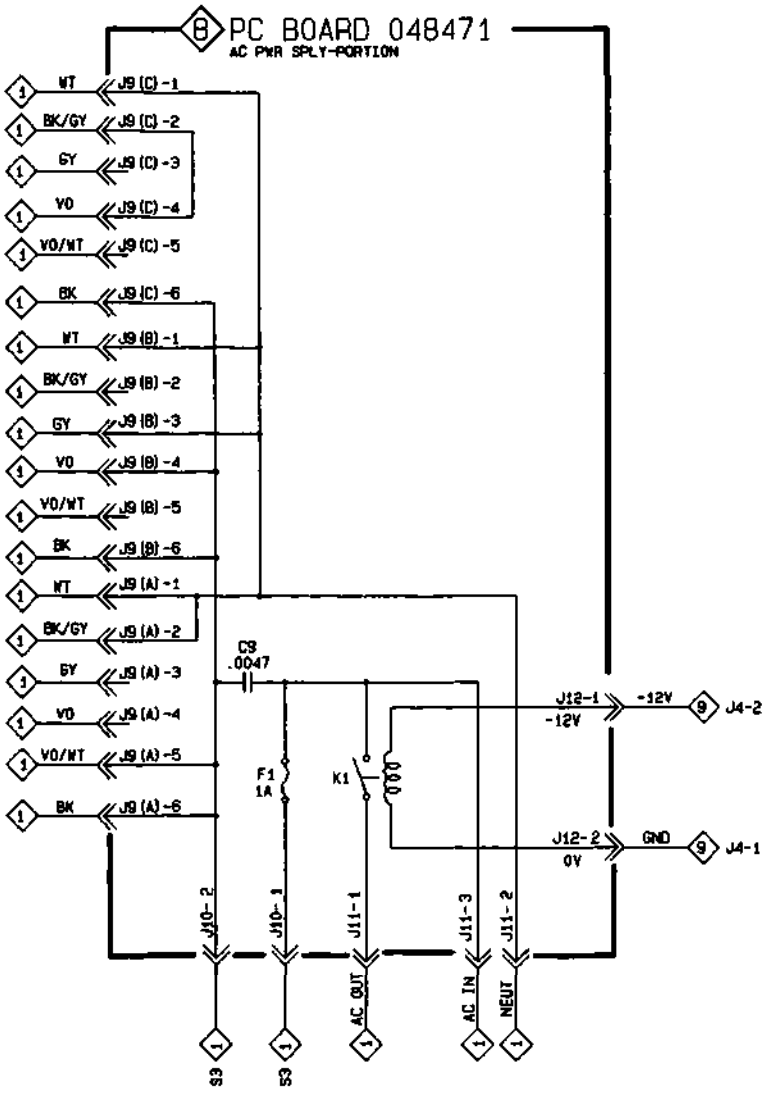


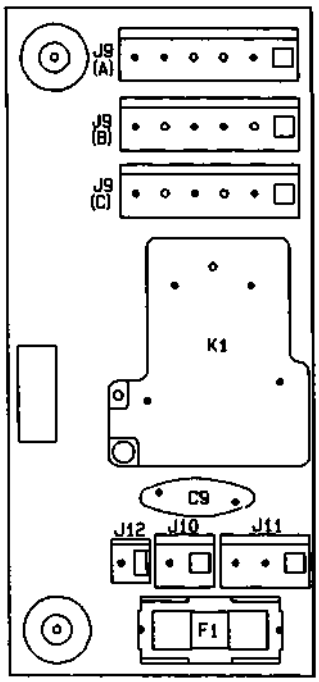
SPEAKER SWITCH PORTION OF PCB 048477

SPEAKER SWITCH PARTS LIST

Symbol	*Part*	*Description*
DIODES		
D1-D6	070047	SIG DIODE 1N4148
SWITCHES		
S3	146241	Speaker Switch

⚠ **WARNING:** Parts located in the below shaded area have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.



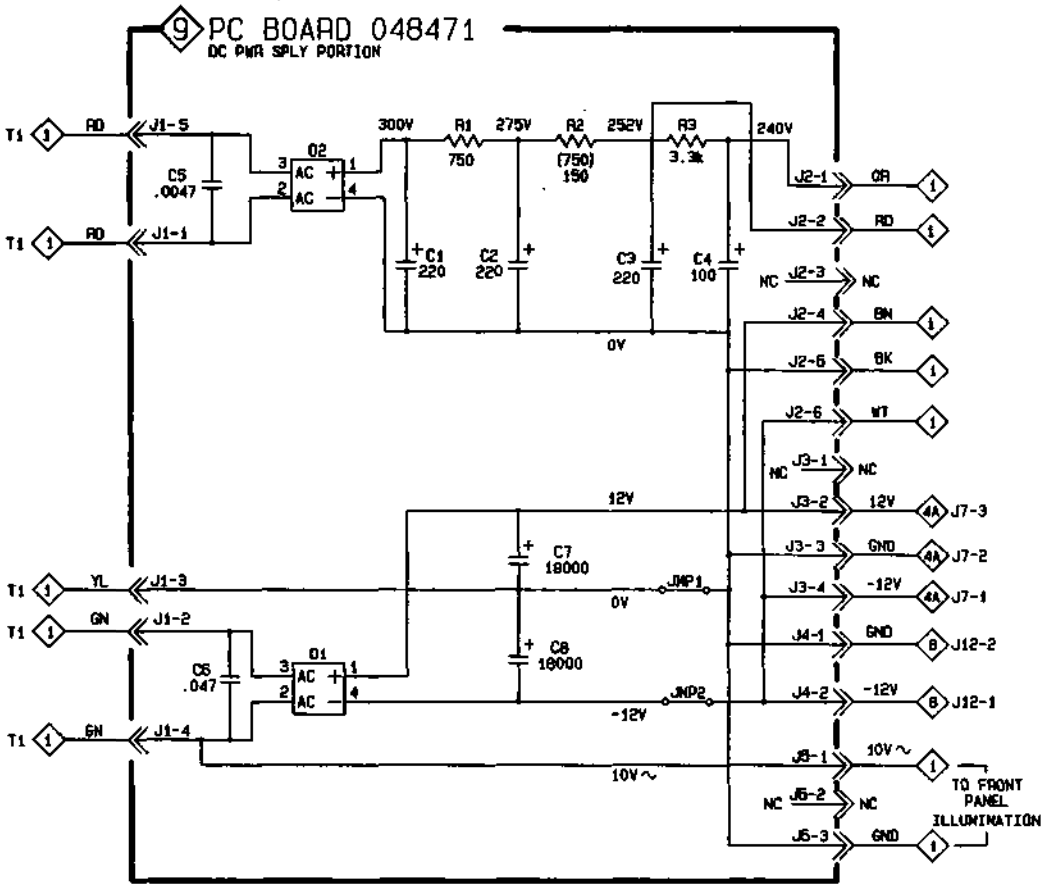


AC POWER SUPPLY PORTION OF PCB 048471

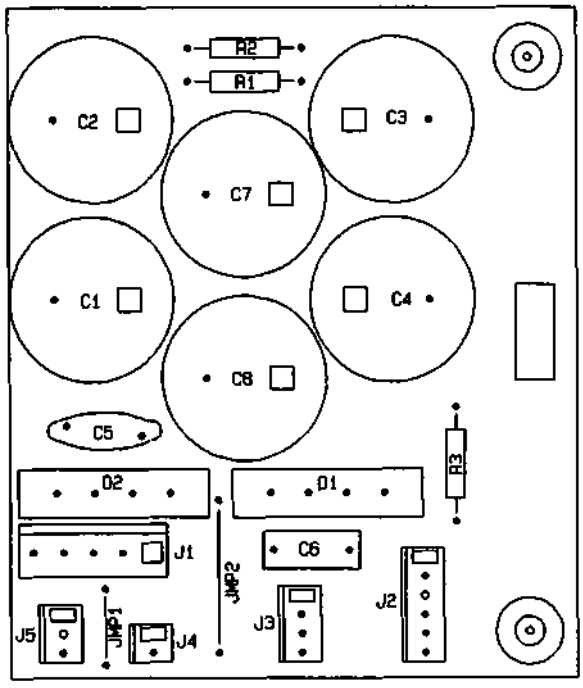
AC POWER SUPPLY PARTS LIST

Symbol	*Part*	*Description*
CAPACITOR		
C9	061276	Disc Cap, .0047uF, 400VAC
FUSES		
F1	089081	Fuse 1A, 2AG
RELAYS		
K1	087054	SPST,12VDC

⚠ WARNING: Parts located in the below shaded area have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.



NOTE: Components and values toned in gray warrant your attention; parenthasized values apply to serial numbers LK1001-LK1989, non-parenthasized values apply to serial numbers LK1990 and above.



DC POWER SUPPLY PORTION OF PCB 048471

DC POWER SUPPLY PARTS LIST

Symbol	*Part*	*Description*
DIODES		
D1.D2	070044	BRIDGE, 400V, 2A

Repacking Instructions

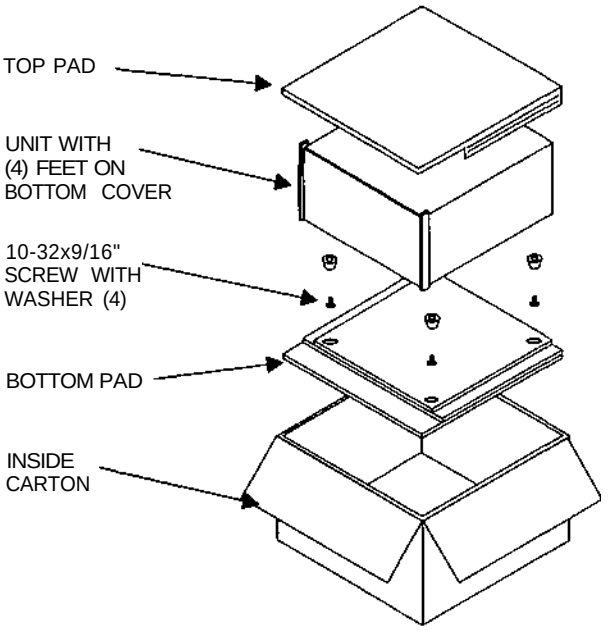
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

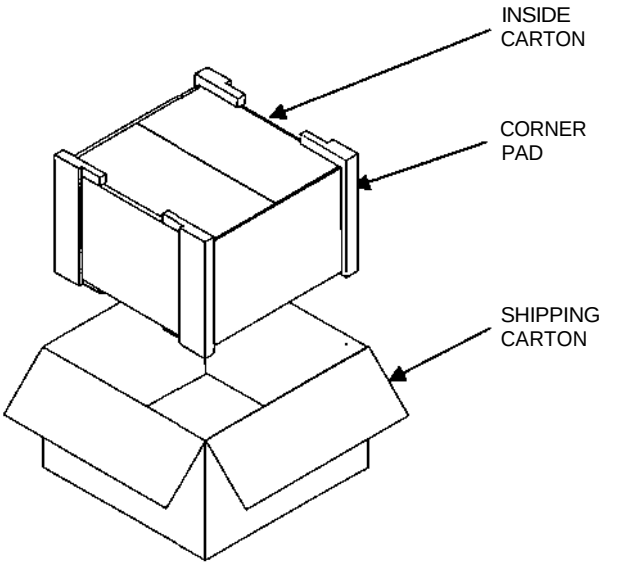
IMPORTANT - The four plastic feet must be attached to the bottom of the unit so they will locate in the four holes of the bottom pad. Failure to do this will result in shipping damage.

If a shipping carton or any of the interior parts is needed, please call or write the Customer Service Department of McIntosh Laboratory. Order parts from the accompanying list by part number.

Use the original shipping carton and interior parts only if they are in good serviceable condition.

Qty.	Part No.	Description
1	033870	Shipping carton only
2	033884	Corner pad
1	033883	Inside carton only
1	033885	Top pad
1	033886	Bottom pad
4	017156	Plastic foot
4	100160	#10-32 x 9/16" Screw
4	104080	#10 Flat washer
1	033915	Shipping carton complete with all the above parts





McIntosh

C22 PREAMPLIFIER

McIntosh Laboratory, Inc., 2 Chambers Street, Binghamton, NY 13903
Telephone (607) 723-3512
Printed in U.S.A.
Part No. 040354
BE032003